NEWS RELEASE

Kewpie Corporation
1-4-13 Shibuya, Shibuya-Ku, Tokyo 150-0002, Japan

kewpie
love around the kitchen table

Kewpie Confirms Possibility That Low Molecular Weight Peptides Add to the Richness of Egg Yolk Mayonnaise

Pursuing the true nature of great taste to bring about rich culinary lifestyles

Tokyo, Japan (February 28, 2025) — Kewpie Corporation ("Kewpie") has confirmed, following a search for the ingredient that contributes to the richness of egg yolk mayonnaise, made from egg yolks, that there is a possibility that this ingredient is low molecular weight peptides from egg yolks. These research results will be presented in poster form at the 2025 Annual Meeting of the Japan Society for Bioscience, Biotechnology, and Agrochemistry (Sapporo), which will be held from Tuesday, March 4 to Saturday, March 8, 2025.

1. Purpose of the research

Egg yolk mayonnaise is known to have more *kokumi*, or richness, the more egg yolks are used, and to develop more umami and richness after several weeks compared to immediately after production. Previous research has confirmed that the amount of peptides from egg yolks included in egg yolk mayonnaise increase over time following production. Further research has been carried out to search for the ingredient that contributes to the richness of egg yolk mayonnaise.

2. Outline of the results

It was found that of the types of egg yolk mayonnaise, those that had greater proportions of egg yolk had increased low molecular weight peptides following storage equivalent to two months. On the other hand, it was found that high molecular weight peptides and proteins decreased following storage for mayonnaise types with greater proportions of egg yolk. These results suggest that low molecular weight peptides from egg yolk in egg yolk mayonnaise contribute to its richness.

In the poster presentation, Kewpie will also report on whether the ingredient thought to contribute to egg yolk mayonnaise richness is also sensed by the CaSR[*1] human taste receptors.

This year marks 100 years since Kewpie first began producing and selling mayonnaise back in 1925, the first company in Japan to do so. Through improvements to our products, and over the long years, we have continually carried out research to pursue the true nature of great taste. We shall continue this "great taste research" in order to achieve rich culinary lifestyles and contribute to the food and health of the world.

*1. The human tongue has numerous taste receptor cells, which are sensitive to the different flavors, and taste receptors lie on their surfaces. The CaSR (calcium-sensing receptors) are sensitive to *kokumi* substances, and via the gustatory nerve, they pass this information to the brain, which recognize it as richness.

Research Outline

1. **Preliminary research: Changes in richness as sensed by taste for egg yolk mayonnaise with high egg yolk content**

—Experiment details

Egg yolk mayonnaise with a high egg yolk content (high egg yolk type[*2]) was taste-tested both before and after storage (2 months, 6 months, 10 months, 12 months).

—Results:

Richness was sensed more strongly following storage than before storage.

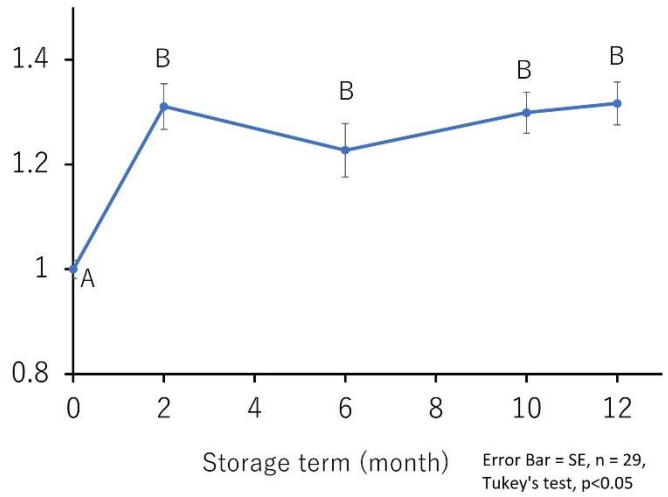

Fig. 1. Changes over time in richness of egg yolk mayonnaise with high egg yolk content

A number of elements related to richness were assessed using a scoring system and the averages calculated. Pre-storage was set at 1.0 to use as a relative value for comparison. The assessment was done by panelists trained in detecting basic flavors. There were significant differences between different letters.

2. **Experiment: Changes in amount of peptides in mayonnaise types with varying egg yolk content**

—Experiment details

Gel filtration chromatography was used to measure the distribution of molecular weights in two types of mayonnaise with different egg yolk content (low egg yolk content, high egg yolk content[*2]), and changes in amount were compared between before storage and after storage (equivalent to two months) and between low molecular weight peptides and high molecular weight peptides/proteins.

—Results:

The low molecular weight peptides were found to increase through storage, and increase more in the high egg yolk content mayonnaise. On the other hand, the high molecular weight peptides and proteins did not show any major differences before and after storage for the low egg yolk content mayonnaise, and decreased in the high egg yolk content mayonnaise. Degradation of the high molecular weight peptides and protein in the high egg yolk content mayonnaise is ongoing, which is thought to be due to the increase in low molecular weight peptides. This suggests the possibility that this change affects the richness of egg yolk mayonnaise following storage.

*2. High egg yolk mayonnaise has about 2.3 times the amount of egg yolk compared to low egg yolk mayonnaise.

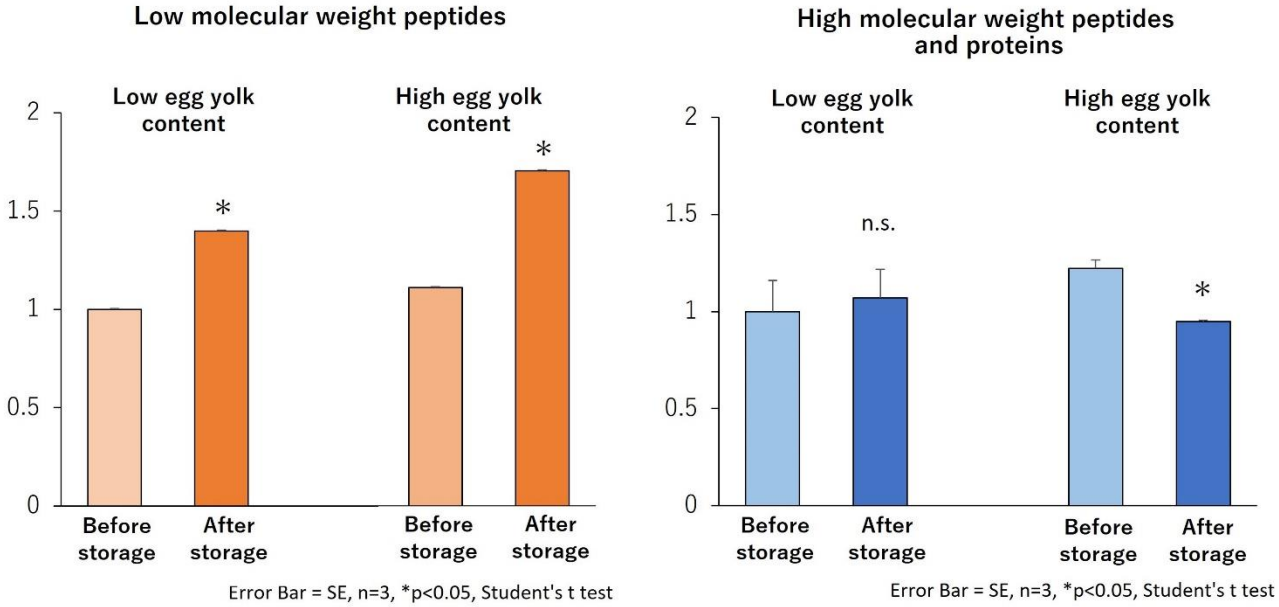

Fig. 2. Comparison of peptide amounts before and after storage of mayonnaise with differing egg yolk content

Molecular weight distribution was measured using gel filtration chromatography (low molecular weight peptides: 1000 Da or lower; high molecular weight peptides: 1000 Da or higher). The graph above shows a relative comparison of the gel filtration chromatography response values compared with low egg yolk mayonnaise before storage set at 1.0.